

REMARKS

Reconsideration and allowance of this application are respectfully requested in light of the foregoing amendments and the following remarks.

Claim Status

Claims 1-17 were originally filed. Claims 18-19 were previously added in a preliminary amendment. Currently, claims 1 and 2 have been amended and claims 1-19 are pending.

35 U.S.C. § 102 Rejection

Claims 1-3, 8, 10-12, and 18 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent Application No. 2003/0122111 to Glatkowski (hereinafter referred to as "Glatkowski"). Applicant respectfully traverses.

The language of independent claims 1 and 2 have been amended to "consisting of" in order to further define the invention set forth in each claim. This amendment overcomes the instant §102 anticipation rejection over Glatkowski as Glatkowski discloses the suspension of SWNTs in sodium dodecyl sulfate (SDS) and PVP in solution. (See Paragraph 131). This is in contrast to the instant invention which omits the inclusion of SDS in either claim 1 or 2.

Additionally, in reference to independent claim 2, Glatkowski makes a passing reference to the inclusion of a surfactant, while

the instant claim specifically calls for a nonionic surfactant. By the Examiner's own admission on Page 4, Line 4 of the instant office action, Glatkowski fails to teach the use of a nonionic surfactant. In fact, the word "nonionic" never even appears within the Glatkowski specification. Hence the above mentioned limitation overcomes the instant §102 anticipation rejection over Glatkowski.

Regarding independent claim 12, Glatkowski discloses the suspension of SWNTs in sodium dodecyl sulfate (SDS) and PVP in solution followed by an incubation period of twelve hours at 50°C, flocculation with IPA, centrifugation, and multiple washings in water. (See Paragraph 131). This is in stark contrast to the instant invention which discloses a method for producing a carbon nanotube dispersion liquid which does not include any of the above steps. Claim 12 of the instant invention calls for the mixing and dispersing of a carbon nanotube in a mixture solution of an amide-based organic solvent and a PVP under ultrasonication (Specification, Page 5, Lines 14-19). To anticipate a claim, a single source must contain all of the elements of the claim. See *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1379, 231 USPQ 81, 90 (Fed. Cir. 1986); *Atlas Powder Co. v. E.I. du Pont De Nemours & Co.*, 750 F.2d 1569, 1574, 224 USPQ 409, 411 (Fed. Cir. 1984); *In re Marshall*, 578 F.2d 301, 304, 198 USPQ 344, 346 (C.C.P.A. 1978). Missing elements may not be supplied by the knowledge of one skilled in the art or the disclosure of another

reference. See *Structural Rubber Prods. Co. v. Park Rubber Co.*, 749 F.2d 707, 716, 223 USPQ 1264, 1271 (Fed. Cir. 1984). Where a reference discloses less than all of the claimed elements, an Examiner may only rely on 35 USC § 103. See *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 780, 227 USPQ 773, 777 (Fed. Cir. 1985). Therefore, the instant § 102 anticipation rejection over Glatkowski should be removed as moot in view of the current amendments.

Claims 3, 8, and 10-11 are dependent on claim 1 and claim 18 is dependent on claim 2. "If an independent claim is not anticipated by prior art, then its dependent claims, which necessarily include the limitations of the independent claim, are not anticipated either. *Kovin Assoc. v. Extech/Exterior Technologies*, 2006 U.S. Dist. LEXIS 63250 (N.D. Ill. 2006), citing *Trintec Indus., Inc. v. Top-U.S.A. Corp.*, 295 F.3d 1292, 1296 (Fed. Cir. 2002). Hence, dependent claims 3, 8, 10-11, and 18 are not anticipated under §102 and the rejection over Glatkowski removed.

Claims 1-3, 6-9, 12-13, 15, and 17-18 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent Application No. 2002/0046872 to Smalley (hereinafter referred to as "Smalley"). Applicant respectfully traverses.

As stated above, the language of independent claims 1 and 2 have been amended to "consisting of" in order to further define the

invention set forth in each claim. This amendment overcomes the instant § 102 anticipation rejection over Smalley as Smalley, like Glatkowski above, discloses the suspension of SWNTs in sodium dodecyl sulfate (SDS) and PVP in solution. (See Paragraph 64). This is in contrast to the instant invention which omits the inclusion of SDS in either claim 1 or 2. Additionally, in reference to independent claim 2, Smalley makes a passing reference to the inclusion of a surfactant, while the instant claim specifically calls for a nonionic surfactant. As in Glatkowski described above, the phrase "nonionic surfactant" never appears within the entire Smalley specification. Hence the above mentioned limitation overcomes the instant §102 anticipation rejection over Smalley.

Regarding independent claim 12, Smalley, like Glatkowski, discloses the suspension of SWNTs in sodium dodecyl sulfate (SDS) and PVP in solution followed by an incubation period of twelve hours at 50°C, flocculation with IPA, centrifugation, and multiple washings in water. (See Paragraph 64). Again, this is in stark contrast to the instant invention which discloses a method for producing a carbon nanotube dispersion liquid which does not include any of the above steps. Claim 12 of the instant invention calls for the mixing and dispersing of a carbon nanotube in a mixture solution of an amide-based organic solvent and a PVP under ultrasonication (Specification, Page 5, Lines 14-19). For the same

reasons as stated above, the instant § 102 anticipation rejection over Smalley should be removed as moot in view of the current amendments.

Claims 3 and 6-9 are dependent on claim 1, claim 13 is dependent on claim 12, claims 15 and 17 are dependent on claim 14 which was not rejected, and claim 18 is dependent on claim 2. "If an independent claim is not anticipated by prior art, then its dependent claims, which necessarily include the limitations of the independent claim, are not anticipated either. *Kovin Assoc. v. Extech/Exterior Technologies*, 2006 U.S. Dist. LEXIS 63250 (N.D. Ill. 2006), citing *Trintec Indus., Inc. v. Top-U.S.A. Corp.*, 295 F.3d 1292, 1296 (Fed. Cir. 2002). Hence, dependent claims 3, 8, 10-11, and 18 are not anticipated under §102 and the rejection over Smalley removed.

§103 Rejection

Claims 1-5, 14, 16, and 19 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Application No. 2003/0122111 to Glatkowski (hereinafter referred to as "Glatkowski") in view of U.S. Patent Application No. 2005/0025694 to Zhang (hereinafter referred to as "Zhang"). Applicant respectfully traverses.

Applicant restates all arguments previously presented to reiterate that Glatkowski does not disclose the invention of claims 1-3 and 18. Specifically, Glatkowski discloses the suspension of SWNTs in sodium dodecyl sulfate (SDS) and PVP in solution. (See Paragraph 131). This is in contrast to the instant invention which omits the inclusion of SDS in any claim.

The prior art reference or combination of references relied upon by the Examiner must teach or suggest all of the limitations of the claims. See *In re Zurko*, 111 F.3d 887, 888-89, 42 U.S.P.Q.2d 1467, 1478 (Fed. Cir. 1997); *In re Wilson*, 424 F.2d 1382, 1385, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970) ("All words in a claim must be considered in judging the patentability of that claim against the prior art."). The teachings or suggestions, as well as the expectation of success, must come from the prior art, not applicant's disclosure. See *In re Vaeck*, 947 F.2d 488, 493, 20 U.S.P.Q.2d 1438, 1442 (Fed. Cir. 1991). In this instance, from the information detailed above, it is clear that Glatkowski and Zhang fail to teach or suggest all the limitations of Applicant's claims.

Looking specifically at the method described in claim 14, Glatkowski discloses the suspension of SWNTs in sodium dodecyl sulfate (SDS) and PVP in solution followed by an incubation period of twelve hours at 50°C, flocculation with IPA, centrifugation, and multiple washings in water. (See Paragraph 131). This method of

"wrapping" nanotubes in PVP essentially teaches away from the instant invention which requires none of the preparation steps outlined above. In fact, both Glatkowski and Smalley teach essentially the same method for "wrapping" nanotubes. This is in stark contrast to the instant invention which discloses a method for producing a carbon nanotube dispersion liquid which does not include any of the above steps. Claim 14 of the instant invention calls for the mixing and dispersing of a carbon nanotube in a mixture solution of an amide-based organic solvent and a nonionic surfactant under ultrasonication followed by mixing the resultant dispersion with a PVP. (Specification, Page 5, Lines 14-19). The combination of the description cited above from Glatkowski with the nonionic surfactant described in Zhang fails to result in the instant invention.

Motivation may be lacking when the state of the art at the time of the invention in question was discovered pointed researchers in a different direction than the inventor proceeded. Indeed, the Federal Circuit has repeatedly recognized that proceeding contrary to the accepted wisdom in the art represents "strong evidence of unobviousness." *In re Hedges*, 783 F.2d 1038, 1041, 228 U.S.P.Q. 685, 687 (Fed. Cir. 1986); *W.L Gore & Assocs., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1552, 220 U.S.P.Q. 303, 312 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984) (prior art teaching that conventional polypropylene should have reduced

crystallinity before stretching and should undergo slow stretching, led away from claimed process of producing porous article by expanding highly crystalline PTFE by rapid stretching); accord *In re Fine*, 837 F.2d 1071,1074, 5 U.S.P.Q.2d 1596, 1599 (Fed. Cir. 1988).

The U.S. Supreme Court recently held that rigid and mandatory application of the "teaching-suggestion-motivation," or TSM, test is incompatible with its precedents. *KSR Int'l Co. v. Teleflex, Inc.* 127 S.Ct 1727, 1741 (2007). The Court did not, however, discard the TSM test completely; it noted that its precedents show that an invention "composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." *Id.*

The Court held that the TSM test must be applied flexibly, and take into account a number of factors "in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed." *Id.* at 1740-41. Despite this flexibility, however, the Court stated that "it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the [prior art] elements in the way the claimed new invention does." *Id.* "To facilitate review, this analysis should be made explicit." *Id.*

The obviousness rationale addressed in *KSR* was premised on combining elements known in the prior art. *Id.* at 1738-39. The *KSR* Court noted that obviousness cannot be proven merely by showing that the elements of a claimed device were known in the prior art; it must be shown that those of ordinary skill in the art would have had some "apparent reason to combine the known elements in the fashion claimed." *Id.* at 1741.

In the same way, when the prior art teaches away from the claimed solution, obviousness cannot be proven merely by showing that a known composition could have been modified by routine experimentation or solely on the expectation of success; it must be shown that those of ordinary skill in the art would have had some apparent reason to modify the known composition in a way that would result in the claimed composition. See also *Ex parte Thomas J. Whalen II, et al*, BPAI 2007-4423 (2008).

Based on *KSR v. Teleflex, Inc.* 127 S.Ct. 1727, 167 L.Ed2d 705, 2007 U.S. Lexis 4745 (2007), the obviousness question may be broken down to: Is the invention predictable based upon the prior art? *Id.* at 1740, 721. In the instant case, the answer to that question is simply "no." Hindsight reconstruction is not permitted as the Federal Circuit has repeatedly warned that the requisite motivation to modify a reference must come from the prior art, not Applicant's specification. See *In re Dow Chem. Co.*, 837 F.2d 469, 473, 5

U.S.P.Q.2d 1529, 1531-32 (Fed. Cir. 1988) ("there must be a reason or suggestion in the art for selecting the procedure used, other than the knowledge learned from the applicant's disclosure.") Using an Applicant's disclosure as a blueprint to reconstruct the claimed invention from isolated piece of the prior art contravenes the statutory mandate of section 103 of judging obviousness at the point in time when the invention was made. See *Grain Processing Corp. v. American Maize-Prods. Co.*, 840 F.2d 902, 907, 5 U.S.P.Q.2d 1788, 1792 (Fed. Cir. 1988).

Dependent claims are nonobvious under section 103 if the independent claims from which they depend are nonobvious. *Hartness Int'l, Inc. v. Simplimatic Eng'g Co.*, 819 F.2d 1100, 1108, 2 USPQ2d 1826, 1831 (Fed. Cir. 1987); *In re Abele*, 684 F.2d 902, 910, 214 USPQ 682, 689 (CCPA 1982); see also *In re Sernaker*, 702 F.2d 989, 991, 217 USPQ 1, 3 (Fed. Cir. 1983). Hence, since independent claims 1, 2, and 14 are nonobvious, dependent claims 3-5, 16 and 19 are also nonobvious and the rejection under §103(a) as being unpatentable over Glatkowski in view of Zhang should be removed.

Conclusion

In view of the foregoing, Applicant respectfully requests an early Notice of Allowance in this application.

Respectfully submitted,



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